

Slim Sensor with Plug-in Outputs, Built-in Time Delays

- Plug-in replaceable outputs
- Light-ON/Dark-ON operation, switch selectable
- Optional solid-state outputs
- Polarized diffuse and through-beam models
- Timer models provide selectable ON-delay, OFF-delay and one-shot outputs
- Standard with 3 A relay output



Ordering Information

■ SENSORS

Method of detection		Through-beam	Retroreflective	Diffuse reflective
Sensing distance		10 m (32.8 ft)	3 m (9.8 ft)	70 cm (27.6 in)
Part number	Without timer	E3A2-10M4	E3A2-R3M4	E3A2-DS70M4
	ON-delay, OFF-delay, one-shot equal ON- and OFF-delays (0.1 to 5 seconds)	E3A2-10M4T	E3A2-R3M4T	E3A2-DS70M4T
	Independent ON-delays and OFF-delays (0.1 to 5 seconds)	E3A2-10M4D	E3A2-R3M4D	E3A2-DS70M4D

■ ACCESSORIES

Description		Part number
Solid-state output modules	AC (SCR) output module; 200 mA, 250 VAC max. load	G3K-2R2P-1
	DC NPN output module; 200 mA, 30 VDC max. load, dual complementary	G3KD-YR2P-1
	DC PNP output module; 200 mA, 30 VDC max. load, dual complementary	G3KD-YR2P-2
Reflector adapter for stud-mounting E39-R1 reflector		E39-L7

■ REPLACEMENT PARTS

Description	Part number
Relay output module, SPDT, 3 A at 250 VAC (output supplied with each sensor)	G6C-2117P-DC8
Reflector (supplied with retroreflective sensor)	E39-R1
Mounting bracket (supplied with each sensor)	E39-L34

Specifications

Part number			E3A2-10□□□	E3A2-R3□□□	E3A2-DS70□□□
Method of detection			Through-beam	Retroreflective	Diffuse reflective
Supply voltage			24 to 240 VAC, 50/60 Hz; 12 to 240 VDC		
Power consumption	Relay output type		Emitter: 0.82 W max. Receiver: 1.2 W max.	1.5 W max.	
	DC solid-state output type				
	AC solid-state output type		Emitter: 0.82 VA max. Receiver: 1.2 VA max.	2 VA max.	
Sensing distance			10 m (32.8 ft)	3 m (9.8 ft) with E39-R1 reflector (included)	70 cm (27.6 in) with 10 x 10 cm (3.94 x 3.94 in) 90% reflectance white mat paper
Light source			Pulse modulated infrared LED (950 nm)	Pulse modulated red LED, polarized (680 nm)	Pulse modulated infrared LED (950 nm)
Detectable object type			Opaque materials, 26 mm (1.02 in) minimum dimension	Opaque and mirror surface materials, 56 mm (2.20 in) min. dimension	Opaque and translucent materials
Operation mode			Light-ON/Dark-ON, switch selectable		
Sensitivity			Fixed	Adjustable	
Mutual interference protection			Not provided	Provided	
Control output	Relay	Type	SPDT with G6C-2117P-DC8 output module (standard)		
		Max. load	3 A, 250 VAC (p.f. = 1); 3 A, 30 VDC		
	AC solid-state	Type	SCR with G3K-2R2P-1 output module (optional)		
		Max. load	200 mA, 250 VAC		
		Min. load	5 mA		
		Max. inrush	2 A		
		Off-state leakage current	1 mA max.		
	DC solid-state	Type	NPN-SPDT with G3KD-YR2P-1 output module (optional) PNP-SPDT with G3KD-YR2P-2 output module (optional)		
		Max. load	200 mA, 30 VDC		
		Max. on-state voltage drop	2 VDC at 200 mA		
Response time (ON and OFF)	Relay		15 ms max. with G6C-2117P-DC8 output module (standard)		
	AC solid-state output		30 ms max. with G3KD-2R2P-1 output module (optional)		
	DC solid-state		1 ms max. with G3KD-YR2P-1 or -2 output modules (optional)		
Timing functions	Type E3A2-□□□T		Normal, ON-delay, OFF-delay, one-shot or equal ON- and OFF-delays, switch selectable		
	Type E3A2-□□□D		Independent ON- and OFF-delays		
	Range		0.1 to 5 seconds		
Circuit protection	Output short-circuit		Provided (AC solid-state and DC solid-state output modules only)		
	DC power supply reverse polarity		Provided		
Indicators			Emitter: Power On (red LED) Receiver: Light Incident (red LED) and output stability (green LED); Output Operation (yellow LED) on timer-equipped models	Light Incident (red LED) and Output Stability (green LED); Output Operation (yellow LED) on timer-equipped models	
Materials	Lens		Plastic		
	Case		Plastic		
Mounting			Side surface mount with two through holes; E39-L34 bracket and hardware included		
Connections	Conduit		1/2-14 NPT		
	Wire		Terminal screws		
Weight			Emitter: 200 g (7.1 oz) Receiver: 200 g (7.1 oz)	200 g (7.1 oz)	

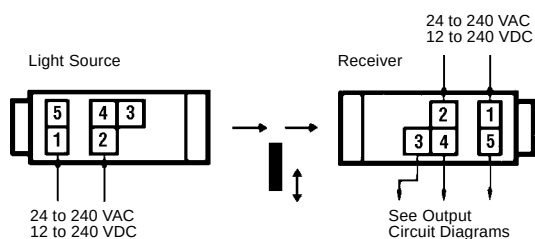
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Specifications Table - continued from previous page

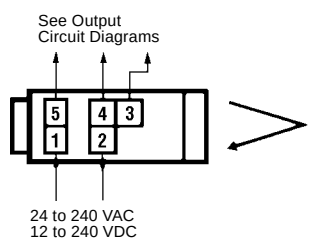
Part number		E3A2-10□□□	E3A2-R3□□□	E3A2-DS70□□□
Enclosure ratings	NEMA	1, 4, 4X, 12		
	IEC 144	IP66		
Approvals	UL	Listed, File Number E41515		
Ambient temperature	Operating	-25° to 55°C (-13° to 131°F)		
	Storage	-30° to 70°C (-22° to 159°F)		

CONNECTIONS

Through-Beam Type

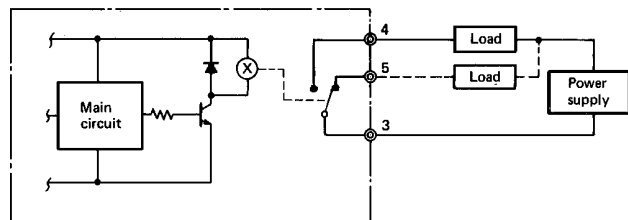


Retroreflective and Diffuse Reflective Types

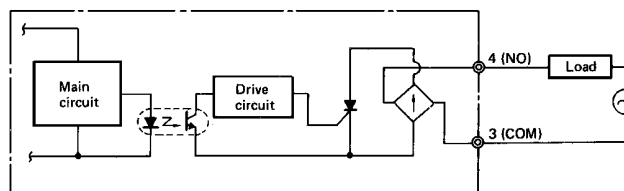


OUTPUT CIRCUIT DIAGRAMS

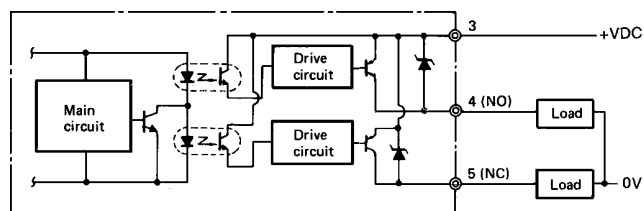
Relay output



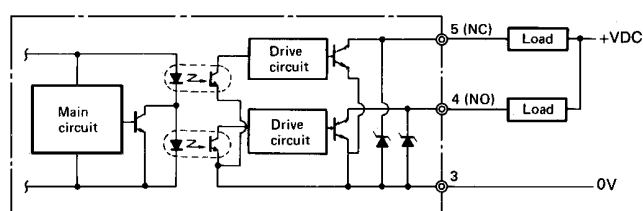
AC solid-state output



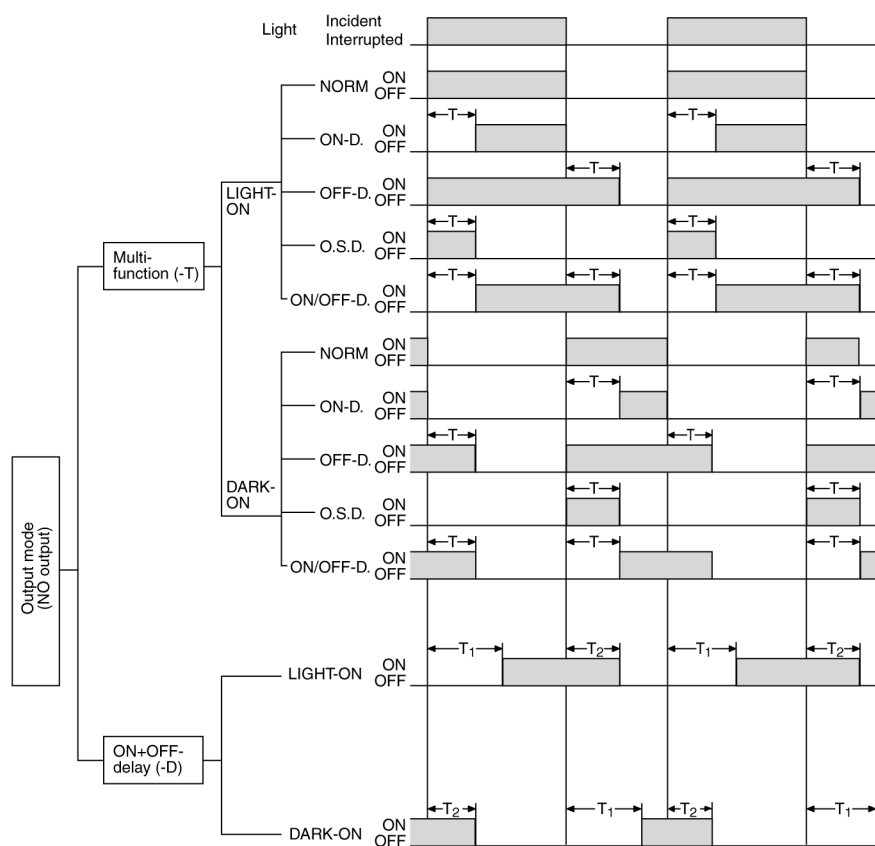
DC solid-state PNP output



DC solid-state NPN output



■ TIMING CHART



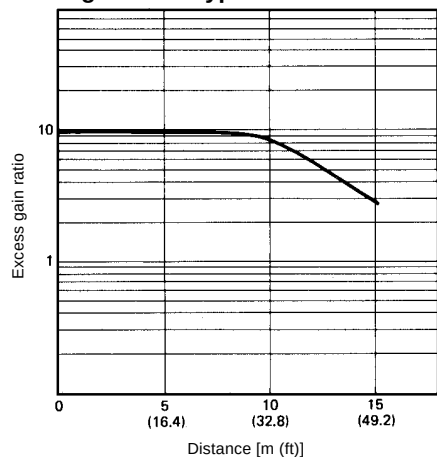
NOTE:

1. For sensors without built-in timer functions, operation follows the NORM mode shown with multi-function time delay models.
2. T_1 , T_2 and T denote set time, variable within 0.1 to 5 second range.
3. For multifunction time delay models (part numbers ending in "T"), the ON- and OFF-delay time settings will be the same.
4. For ON- and OFF-delay models (part numbers ending in "D"), T_1 and T_2 are independently variable.
5. O.S.D.: one shot delay

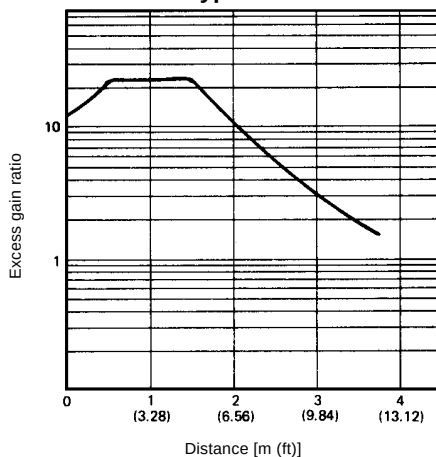
Engineering Data

■ EXCESS GAIN RATIO

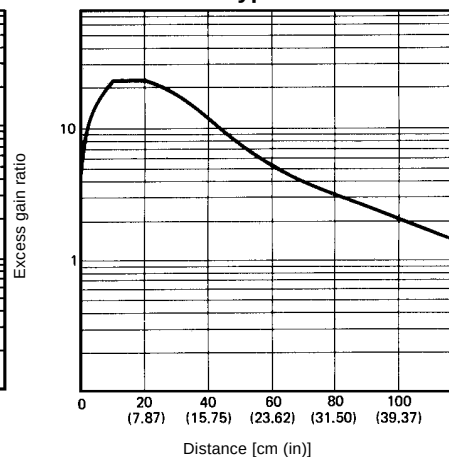
Through-Beam Type



Retroreflective Type

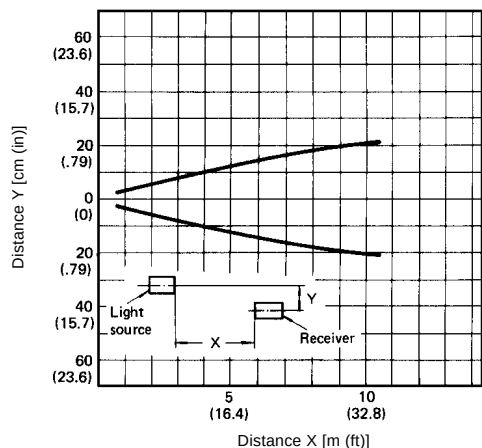


Diffuse Reflective Type



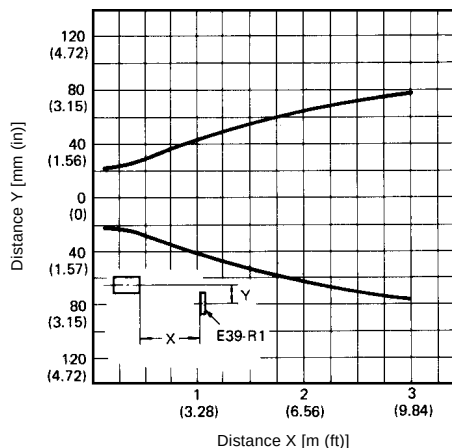
■ LIGHT SOURCE/RECEIVER SETTING RANGE

Through-Beam Type



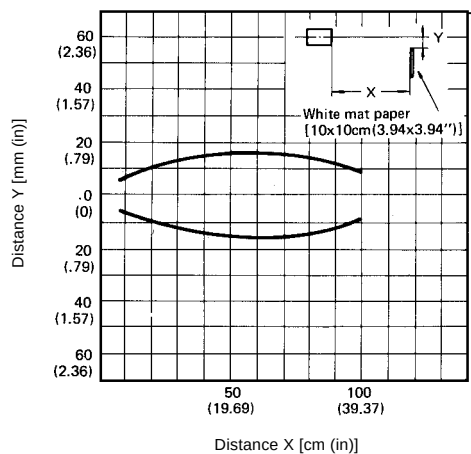
■ REFLECTOR SETTING RANGE

Retroreflective Type



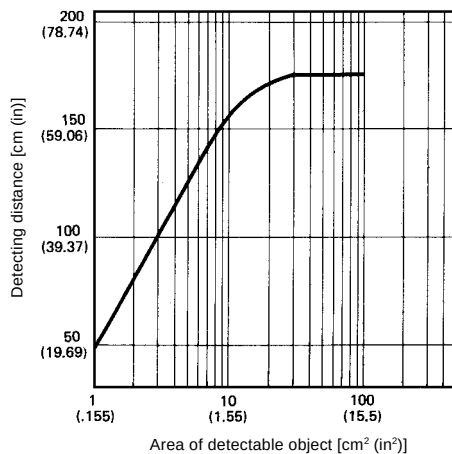
■ OPERATING RANGE

Diffuse Reflective Type



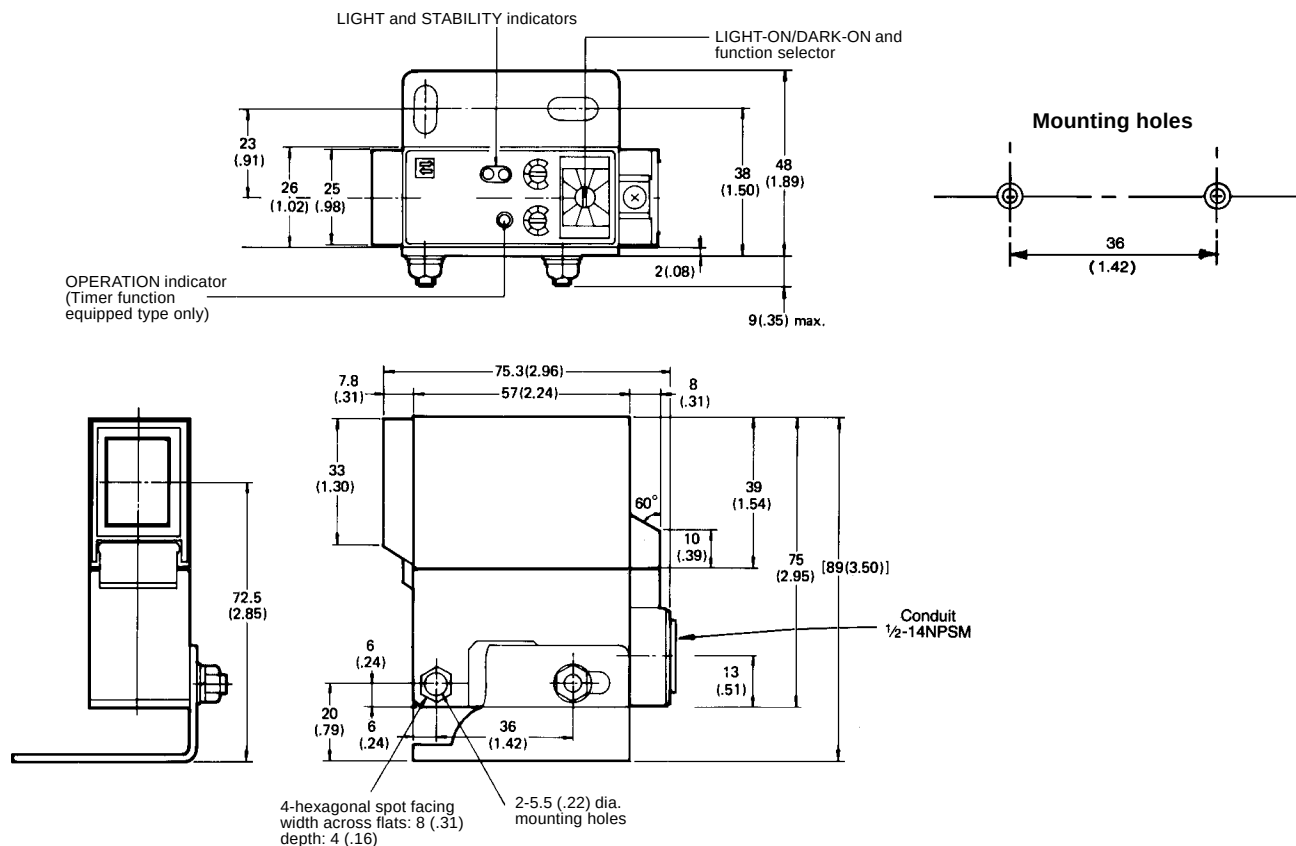
■ DETECTING DISTANCE VS. MINIMUM TARGET SIZE (AT MAXIMUM SENSITIVITY)

Diffuse Reflective Type

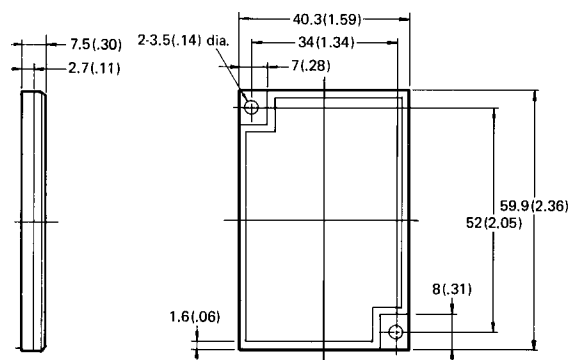


Dimensions

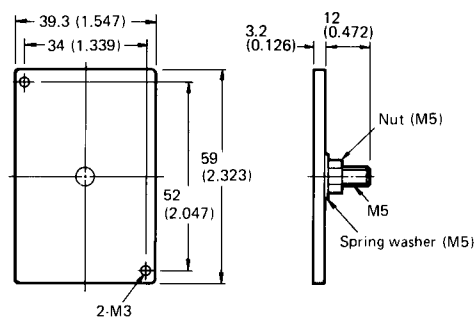
Unit: mm (inch)



E39-R1 Reflector



E39-L7 Reflector Adapter



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